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MASS PRODUCTION OF BIOFERTILIZER (*PSEUDOMONAS FLUORESCENS*)

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ABSTRACT

The use of biofertilizer is low cost when compared to chemical fertilizer Pseudomonas fluorescens are the most important components of biofertilizer. Bio-fertilizers "eco-friendly" fertilizers. Biofertilizers are the substances which contain living microorganism which when applied to the plant helps then to grown without causing any nutrient loss of soil and pollution. The application of biofertilizer is cheaper than the inorganic. The biofertilizer do not cause damage to the soil health and natural environment. Thus the present study focused on the mass production of bio-fertilizer from Pseudomonas fluorescens for its large scale application. DF media was used for the mass production of bio-fertilizer.

KEYWORDS: Biofertilizer, Pseudomonas Fluorescens, PGPR

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INTRODUCTION

The application of Biofertilizer is cheaper than the inorganic fertilizers. The biofertilizer do not causes damage to the soil and environment like inorganic fertilizers. Rhizobium, Azotobacter, Azospirilium and *Pseudomonas fluorescens* BGA have been in use a long time. leguminous crops used to Rhizobium.

The role of plant growth promoting bacteria (PGPB) have been extensively studied as bio-fertilizers increase the yield of agronomically important crops such as wheat **(Khalid** *et al.,* **2004**), corn **(Mehnaz and Lazarovits,2006)**

Pseudomonas fluorescens was also used as a bio-control agent to manage bacterial wilt (**Liu** *et al.,* **1999**) and *Fusarium* wilt in Radish. *Ralstonia solanacearum* mostly persists through soil and crop residues **(Granda and Sequira, 1983)**.In crop such as Tomato and Egg plant the pathogen is carried in seed **(Shakya, 1993).**

Phosphorus solubilizing bacteria and fungi play an important role in converting insoluble phosphotic compound suck as rock phosphate, bone meal and basic slag particularly the chemically fixed soil phosphorus into available from

The group is often dominant within the *Fusarium* soil populations and causes vascular wilt that result in considerable economic losses**.** *Pesedomonas fluorescens* is one of the most important biocontrol agent certain seed and soil borne plant pathogens. Positive results were achieved with *Pesedomonas fluorescens* which controlled bacterial wilt and also bacterial blight on potato in both field and laboratory trials

It is important to evaluate PGPR antagonistic to the pathogen and incorporate them into successful disease management as biocontrol agent

Table 1: Rhizobium Bacteria responsible for N-fixation in different legumes

S. No.	Grop	Rhizobium Species	Legume Crop
01	Alfalfa	Rhizobium meliloti	Melilotus (certain clover),Trigonella(Fenurgreek)
02	Clover	Rhizobium trifolii	Trifolium spp(clovers)
03	Soybean	Rhizobium japonicum	Glycine max (Soybean)
04	Bean	Rhizobium phaseoli	Phaseolus vulgaris(dry bean),Phaseolus coccineus (runner beans)
05	Peas and Vetch	Rhizobium leguminosarum	Pisun (pea),Vicia (vetch),Lathyrus (sweet pea) and Lends spp.(Lentil)
06	Cow pea miscellany	Rhizobium spp.(Miscellany)	Vigna (cow pea),Arachis (peanut), Cajanus (Pigeon pea), Crotolaria etc

Table 2: Bioagents to Control pests of Different Crop

S. No.	Bio-agent	Dose	Pest	Crop
01	*Trichogramma brassiliensis*	2.5cc/ha once in 10 days	*Lepidopteran and Heliothis spp*	Cotton, Tomato
02	*Trichogramma chilonis*	5cc/ha once in 15 days	*Borers*	Sugarcan,paddy,Pulses, Vegetables
03	*Nuclear polyedrosis virous(NPV)*	250-500 LE/ha	*Spodoptera and Heliothis spp*	Vegetable
04	*Beauveria bassiana*	1.0%(affect the young stage)	*Helicoverpa, spodoptera, borers,hairy caterpillars mites,scales etc*	Vegetable

MATERIALS AND METHODS

Bacterial culture *Pseudomonas fluorescens* (MCCB.0217) was procured in Nutrient agar slants from Microbial Culture Collection Bank (MCCB), Department of Microbiology and Fermentation Technology, Jacob School of Biotechnology and Bioengineering, Sam Higginbottom Institute of Agriculture Technology and Sciences Allahabad Uttar Pradesh.

Bacterial culture was maintained in Nutrient agar slant and routinely subcultured at the interval of 15 days and stored at 4°C for further use.

Preparation of Bio-Fertilizer (PGPR)

The inoculum was prepared by inoculating selected rhizobacterial strain in 250 ml flasks containing DF minimal salt medium **(Dworkin and Foster, 1958)**. The medium was incubated at 28 ± 1°C for 48 h in an orbital shaking incubator at 100 rpm. The optical density of inoculum was measured and a uniform population of rhizobacteria {(10^8 colony forming units) (CFU/ml=168* 10^8)} maintained at the time of inoculation. Plating of the bio-formulation was done on Nutrient Agar and plates were incubated at 37°C for 24 h. after incubation colony count was determined. Peat was ground and autoclaved at 121°C for 20 minutes. 100 ml inocula of the selected rhizobacteria was mixed with 100g of peat and incubated for 24 h at 28 ± 1°C before using for seed coating.

RESULTS AND DISCUSSIONS

Figure 1

10^8 colony forming units Nutrient Agar plates

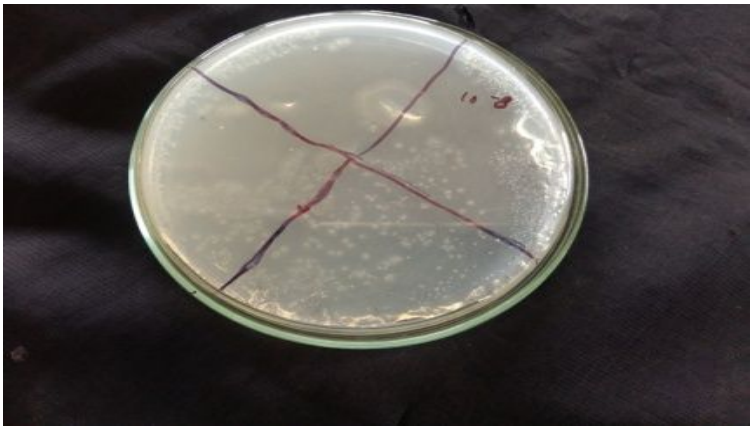

Figure 2

CONCLUSIONS

Biofertilizer use is low cost as compared to chemical fertilizer Biofertilizer arealso pollertion free so, the mass production of Biofertilizer can be helpful for the large scale application the mass production of *Pseudomonas fluorescens* Biofertilizer can help in the reduction of soil health problems and in the increment crop health.

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